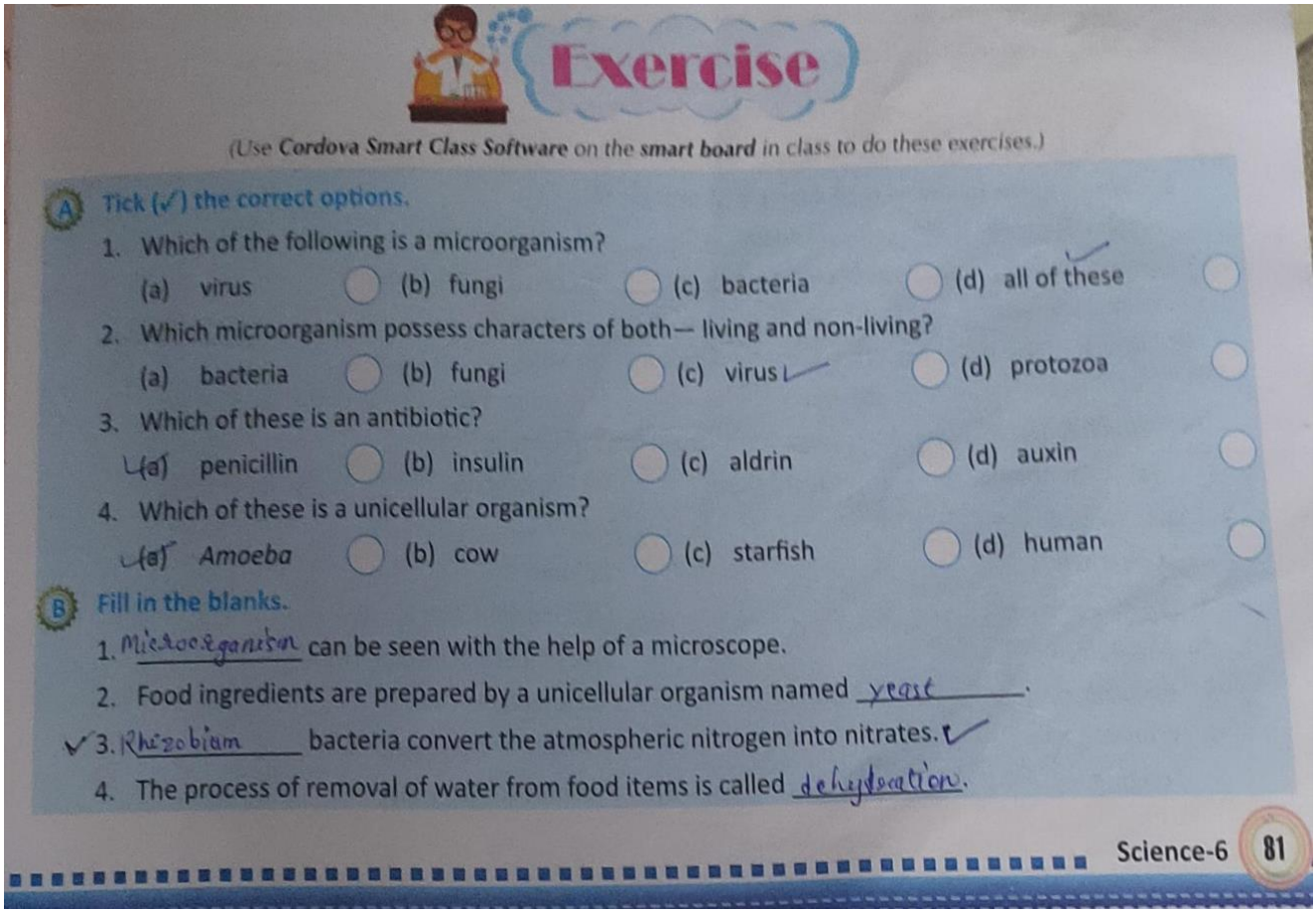
Subject – Science Class- 6 Topic – chapter-8



Exercise

(Use **Cordova Smart Class Software** on the **smart board** in class to do these exercises.)

A Tick (✓) the correct options.

1. Which of the following is a microorganism?
   (a) virus ○ (b) fungi ○ (c) bacteria ○ (d) all of these ✓
2. Which microorganism possess characters of both— living and non-living?
   (a) bacteria ○ (b) fungi ○ (c) virus ✓ (d) protozoa ○
3. Which of these is an antibiotic?
   (a) penicillin ○ (b) insulin ○ (c) aldrin ○ (d) auxin ○
4. Which of these is a unicellular organism?
   (a) Amoeba ○ (b) cow ○ (c) starfish ○ (d) human ○

B Fill in the blanks.

1. Microorganism can be seen with the help of a microscope.
2. Food ingredients are prepared by a unicellular organism named yeast.
3. Rhizobium bacteria convert the atmospheric nitrogen into nitrates. ✓
4. The process of removal of water from food items is called dehydration.

C Match the following correctly.

Column A	Column B
1. Virus b	(a) nitrogen fixation
2. *Rhizobium* a	(b) AIDS
3. Yeast d	(c) curd
4. *Lactobacillus* c	(d) fermentation

D Short answer type questions

1. Write the names of the different types of microorganisms. 74
2. Explain about microorganisms which are useful in our life. 76, 77, 78
3. What is pasteurisation? 79
4. What is food poisoning? Why does it happen? 79
5. Write the harms caused by microorganisms.

E Long answer type questions

1. What are microorganisms? Explain different types of microorganisms with example.
2. What is food preservation? Write the remedies for preventing contamination of food items.
3. Draw diagrams of the following: (a) *Amoeba* (b) *Paramecium* (c) Algae (d) Fungi (e) Virus (f) Root nodules of plants belonging to leguminous family

F Practical Work

1. Examine the benefits and harms caused by microorganisms in our daily life and make a list.
2. Collect information from a nearby hospital or medical store about antibiotics and make list of them.
3. Make a model of any one microorganism.

ADDITIONAL QUESTIONS FOR PRACTICE

A Tick (✓) the correct options.

1. Which of the following is an example of protozoa?
   (a) *Euglena* ◯ (b) *Amoeba* ◯ (c) *Paramecium* ◯ (d) all of these ✓ ◯
2. Anthrax and tuberculosis in cattle are _____ diseases.
   ✓(a) bacterial ◯ (b) viral ◯ (c) fungal ◯ (d) none of these ◯
3. Which of the following is/are preserved by common salt?
   (a) meat ◯ (b) fish ◯ (c) tamarind ◯ (d) all of these ✓ ◯
4. Which of the following microorganisms cause food poisoning?
   (a) Salmonella ◯ (b) Clostridium ◯ (c) Aspergillus ◯ (d) all of these ✓ ◯

B Match the following.

Column A	Column B
1. Virus c	(a) *Lactobacillus* and *E. coli*
2. Mycoplasma d	(b) *Amoeba* and *Paramecium*
3. Bacteria a	(c) HIV and TMV
4. Protozoa b	(d) Mycoplasma pneumonia
5. Fungi e	(e) Mushroom and yeast

C Fill in the blanks.

1. Antony Van Leeuwenhoek observed the living cell for the first time.
2. The Science that deals with the study of microorganisms is called microbiology.
3. Mycoplasma is the smallest cell.
4. Volvox is a colonial algae.
5. Most microorganisms survive best at a moderate temperature of 25°c - 40°c.
6. The process of conversion of sugar into alcohol by the action of microorganisms is called fermentation.
7. Xanthomonas campestris used to make toothpaste.
8. Immunity against a particular disease can be developed by a technique called vaccination.
9. The leftover plant and animal wastes are used as manure in the agricultural field.

D Short answer questions

1. Where do microorganisms live? 73
2. Name two unicellular and two multicellular algae. 75
3. Why do we keep food items in a refrigerator?
4. Why do we dry food grains in the Sun before storing them?

E Long answer questions

1. Why are viruses considered as (a) living things and (b) non-living things?
2. What are the conditions necessary for the growth of microorganisms?
3. What are the advantages of food preservation? Write any three.

F Think and answer

Why do we say that when a person suffers from chickenpox once, he/she is not likely to be attacked by the same disease in future?

Chapter 8: Microorganisms

Multiple Choice Questions **Page No. 75**

1. (c) 2. (a)

Multiple Choice Questions **Page No. 78**

1. (a) 2. (d)

Multiple Choice Questions **Page No. 80**

1. (b) 2. (b)

EXERCISE

A. Tick (✓) the correct options.

1. (d) 2. (c) 3. (a) 4. (a)

B. Fill in the blanks.

1. Microorganisms 2. yeast
3. *Rhizobium* 4. dehydration

C. Match the following correctly.

1. (b) 2. (a) 3. (d) 4. (c)

D. Short answer type questions

1. The microorganisms are of six types:
   (a) Viruses (b) Mycoplasma (c) Bacteria
   (d) Fungi (e) Protozoa (f) Algae
2. Microorganisms are useful to us in many ways.
   (a) In industries (b) Food materials
   (c) Production of curd (d) Production of Antibiotics
   (e) Production of vaccines (f) Increasing soil fertility
   (g) Cleaning the environment (h) Production of Biogas
3. Pasteurisation is a process for preservation of milk. In this method, milk is heated to about 70°C for 15 to 20 seconds to kill the bacteria present in it and then cooled quickly to 10° C to prevent the remaining bacteria from growing. The milk is then stored in sterilised bottles or pouches in cold places.

4. The toxic substances produced by microorganisms make the food poisonous causing serious illness called food poisoning. It could be caused due to the consumption of food spoilt by some microorganisms.
5. Microorganisms are harmful in many ways. Some of the microorganisms cause diseases in human beings, plants and animals. The disease-causing microorganisms are called pathogens. Food items like cereals, pulses, cooked food, etc. get spoilt due to microorganisms and consumption of these food items may cause food poisoning.

E. Long answer type questions

1. The organisms that cannot be seen with the naked eye and can only be observed through a microscope are called microorganisms.

   The different types of microorganisms are:

   (i) **Viruses:** Viruses are the smallest microorganisms. They can only be studied under an electron microscope. Viruses are called the connecting link between living and non-living things. They have the characteristics of both living and non-living things. Viruses are lifeless until they enter a living organism. Viruses are considered as living things because they live, grow and reproduce only inside the living cells of plants and animals. Also, they contain a small amount of genetic material (in the form of DNA or RNA). They are considered to be non-living because they do not have cytoplasm, nucleus or cell membrane and they can be crystallised and stored in bottles (like salt or sugar).

   Some examples of viruses are Vaccinia virus, Influenza virus, Human Immunodeficiency Virus (HIV-I), Polio virus and Tobacco Mosaic Virus (TMV).

(ii) **Mycoplasma:** Mycoplasma is the smallest cell. It is unicellular, microscopic and prokaryotic organism. This bacteria-like organism lacks a cell wall around its cell membrane. Mycoplasma does not have fixed shape and size. It can survive without oxygen. It causes mycoplasma pneumonia in human beings. It is a respiratory infection.

(iii) **Bacteria:** Bacteria (singular : bacterium) are among the smallest and most primitive organisms found on the earth. They are unicellular and prokaryotic organisms. The size of the bacterial cells varies from 0.1 to 0.5 mm (1 micron = 1/1000 mm). Examples are *E.coli* and *Lactobacillus*.

(iv) **Fungi:** Fungi (singular: fungus) are organisms that do not have chlorophyll. Hence, they are heterotrophic. They are usually non-motile. They may be unicellular, multicellular or filamentous. Fungi either live on dead and decaying organic matters (saprophytic) or either on or in the body of the living organisms (parasitic). Examples are yeast, mushroom and mould.

(v) **Protozoa:** Protozoa (singular: protozoan) means the first animal. These are unicellular organisms. They are mostly aquatic but some of them live in soil. Except *Euglena* (autotrophic protozoan), all other protozoa are either saprophytic or parasitic. Examples are *Amoeba* and *Paramecium*.

(vi) **Algae:** Algae (singular: alga) are a group of simple, mostly microscopic plants whose cells contain chlorophyll. Algae is mostly aquatic, found in ponds, lakes and ditches. Some species of algae are unicellular, whereas others are multicellular.

Examples are unicellular algae (*Chlorella*, *Chlamydomonas*, diatoms), colonial algae (*Volvox*) and multicellular algae (*Spirogyra* and *Ulothrix*).

2. The process of maintaining the nutritional value and quality of food items for a long time using physical or chemical methods is called food preservation. The remedies for preventing contamination of food items are:

(i) Foods like fruits, vegetables, meat and cooked food are kept at low temperature in the refrigerator or deep freezers to prevent its spoilage.

(ii) Pasteurisation is a process for preservation of milk. In this method, milk is heated at about 70 °C for 15 to 20 seconds to kill the bacteria present in it and then cooled quickly to 10 °C to prevent the remaining bacteria from growing. The milk is then stored in sterilised bottles or pouches in cold places.

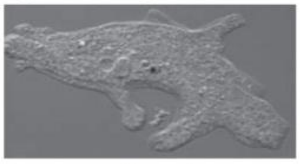
(iii) The process of removal of water from a substance is called dehydration. Sun drying is a traditional method of preserving food. Wheat, rice and pulses are cleaned and dried in the Sun. Vegetables like cauliflower, spinach and methi are also preserved in this manner.

(iv) Food can be preserved by using certain chemical substances that can check the growth of microorganisms.

(v) Salting is used to preserve *amla*, raw mangoes and tamarind.

(vi) Fruits and vegetables are often preserved by oil and vinegar.

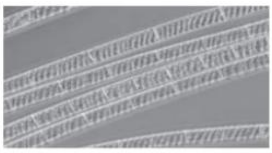
(vii) The sterilised food is sealed in airtight cans to prevent reinfection by microorganisms.

3. (a) 

Amoeba

(b) 

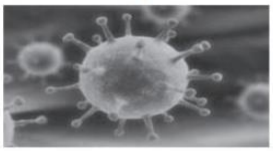
Paramecium

(c) 

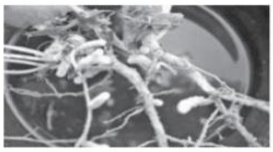
Algae

(d) 

Fungi

(e) 

Virus

(f) 

Root nodules in leguminous plant

F. Practical Work

1. Teacher/Parents may help the students to perform this practical work.
2. Teacher/Parents may help the students to perform this practical work.
3. Teacher/Parents may help the students to perform this practical work.

ADDITIONAL QUESTIONS FOR PRACTICE

A. Tick (✓) the correct options.

1. (d) 2. (a) 3. (d) 4. (d)

B. Match the following.

1. (c) 2. (d) 3. (a) 4. (b) 5. (e)

C. Fill in the blanks.

1.	Antony Van Leeuwenhoek	2.	microbiology	3.	Mycoplasma
4.	*Volvox*	5.	25 °C - 40 °C	6.	fermentation
7.	*Xanthomonas campestris*	8.	vaccination	9.	manure

D. Short answer questions

1. Microorganisms are present everywhere. They are found in water, air, soil, food, human body and bodies of other animals. They are also found in dead and decaying organisms. They are found in all kinds of environments like sea, lakes, ponds, hot deserts and cold regions.
2. Unicellular algae are *Chlorella* and *Chlamydomonas* and multicellular algae are *Spirogyra* and *Ulothrix*.
3. Foods like fruits, vegetables, meat and cooked food are kept at low temperature in the refrigerator or deep freezers to prevent their spoilage. Low temperature prevents the spoilage of food because it retards the growth of microorganisms.
4. We dry food grains in the Sun before storing them in order to remove all the water present in them. After removing the water, we can preserve them for a long time.

E. Long answer questions

1. (a) Viruses are considered as living things because :
   (i) They live, grow and reproduce only inside the living cells of plants and animals.
   (ii) They contain a small amount of genetic material (in the form of DNA or RNA).
   (b) They are considered as non-living things because:
   (i) They do not have cytoplasm, nucleus or cell membrane.
   (ii) They can be crystallised and stored in bottles (like salt or sugar).
2. The following conditions are required (necessary) for the growth of microorganisms:
   (i) **Suitable medium:** Depending on the microorganism, the medium may be freshwater, sea water, soil, dead and decaying matter (for saprophytes) and other organisms (for parasites). Some microorganisms need acidic medium to grow, while others need alkaline. Too much acidic or alkaline medium does not permit their growth.

(ii) **Availability of oxygen:** Most microorganisms need oxygen for respiration. They are called the aerobic microorganisms. Some microorganisms do not require oxygen for respiration and are called anaerobic microorganisms.

(iii) **Suitable temperature:** Most microorganisms survive best at moderate temperatures of 25°C to 40°C. Too cold conditions slow down or even prevent growth of microorganisms, whereas too hot temperature may kill them.

(iv) **Availability of food:** Parasitic or saprophytic microorganisms survive well and increase in number when there is plenty of food available for them.

(v) **Availability of moisture:** Microorganisms need a warm and humid environment to grow.

(vi) **Availability of sunlight:** Direct sunlight often kills microorganisms like bacteria. Bacteria grow well in dark. But photosynthetic microorganisms need sunlight so as to carry out the process of photosynthesis to prepare food.

3. Advantages of food preservation are (any three):

(i) It decreases the wastage of food by avoiding spoilage.

(ii) It increases the storage period of food materials.

(iii) Nutritional value of the food is retained for a longer period.

(iv) It ensures the availability of food in distant places and during off-season. Frozen food items and off-season fruits and vegetables are available in the market throughout the year all over the country.

F. Think and answer

When a person has suffered from chickenpox once, he/she will not be attacked by it again because body has acquired immunity against it. Antibodies that fight against it are present in the body and thus the person will not suffer from the disease again.